

## 2.6.4 Freeway Weaving Capacity Analysis

A 2035 freeway weaving capacity analysis was conducted at the following four segments for the AM and PM peak hours:

- Northbound NC 147 between Westbound East End Connector and Briggs Avenue
- Southbound NC 147 between Briggs Avenue and Eastbound East End Connector
- Eastbound East End Connector between NC 147 and US 70
- Westbound East End Connector between US 70 and NC 147

Traffic volumes on NC 147 weaving segments were estimated based on the proportions of the upstream and downstream mainline and ramp traffic volumes. For instance, traffic on NC 147 before the merge point will be proportioned to the downstream mainline and off-ramp traffic based on the total volume on each of the downstream facilities. A similar approach is used for proportioning upstream on-ramp traffic.

Weaving traffic volumes on the East End Connector were estimated using a more detailed approach because of the high volumes on the East End Connector. A select link analysis was developed that provided detailed information about the travel patterns for selected ramp traffic. The analysis used the regional travel demand model to identify the travel routes of trips passing through a selected link on a ramp. Based on this select link analysis, it was determined that 90 percent of traffic from southbound US 70 to westbound East End Connector will be traveling towards southbound NC 147 and the remaining 10 percent will be traveling towards northbound NC 147. Similarly, 85 percent of the traffic from the northbound US 70 to westbound East End Connector will be traveling towards northbound NC 147 and the remaining 15 percent will be traveling towards southbound NC 147. This analysis assumed that the reverse pattern will be the same: 90 percent of the traffic traveling eastbound on the East End Connector to southbound US 70 will be traveling southbound on NC 147; 85 percent of the traffic traveling eastbound on the East End Connector to northbound US 70 will be traveling northbound on NC 147. Using these trip distribution patterns, the weaving traffic volumes on the East End Connector were estimated.

The weaving capacity analysis for the East End Connector indicated that traffic demand on the weaving segment between US 70 and NC 147 will flow at Level of Service C or better in both directions; a good rate of traffic flow. The weaving capacity analysis for NC 147 between the East End Connector and Briggs Avenue indicates that weaving traffic demand will exceed the roadway capacity (Level of Service F) during both the AM and PM peak periods. The analysis indicates that the high through traffic volumes are the cause of the poor rate of traffic flow. It should be noted that the proposed East End Connector will decrease traffic volumes on NC 147 and thereby improve traffic flow conditions. Additional roadway improvements needed on this segment are beyond the limits of this project.

A summary of the results of the freeway weaving segment capacity analysis for the 2035 Build Conditions is provided in Table 2-5.